THE
MECHANISM OF SPEECH.

Revised and Enlarged
by
HARRY W. WHITE

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With the Author's Complts

THE

MECHANISM OF SPEECH

(Revised and Enlarged)

With an Appendix.

BY

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PREFACE.

The following arrangement of sounds, and their mechanism, does not claim to be altogether original, being the combined result of my training at Ealing, and the experience of fifteen years subsequent work. It occurred to me that some such handbook might be useful in my practice as a Speech Specialist and teacher of Lip-reading, hence its publication.

It will be interesting to note that the term 'articulation' has been employed in preference to that of 'consonant,' on account of its being more descriptive. The term 'consonant' implies the absolute necessity of a vowel being employed, whereas no such thing is needed. They can all be sounded *without the aid of a vowel*, hence we call them articulations, which mean joints of speech.

I would impress upon those of my pupils who stammer, the absolute necessity for making the mechanism of each sound a possession, and carefully separating the vocal from the non-vocal sounds, as it is so common to find persons commencing words without voice, when the vocal movement should be the first consideration. Then again, the organic formation should be established *before* the breath is set in motion, otherwise a repetition of the sound may result. To those learning lip-reading, I would say *study the vowels*, as it is quite impossible to lip-read with any degree of accuracy without an intimate knowledge of the mechanism of the vowel sounds. Be careful to observe the difference between long vowels and their short equivalents, and then the articulations will present far less difficulty than is generally supposed.

To both students of speech and lip-reading, I would commend the notes on the *double explosives* and *double continuous* sounds to be found on page 60 (Appendix).

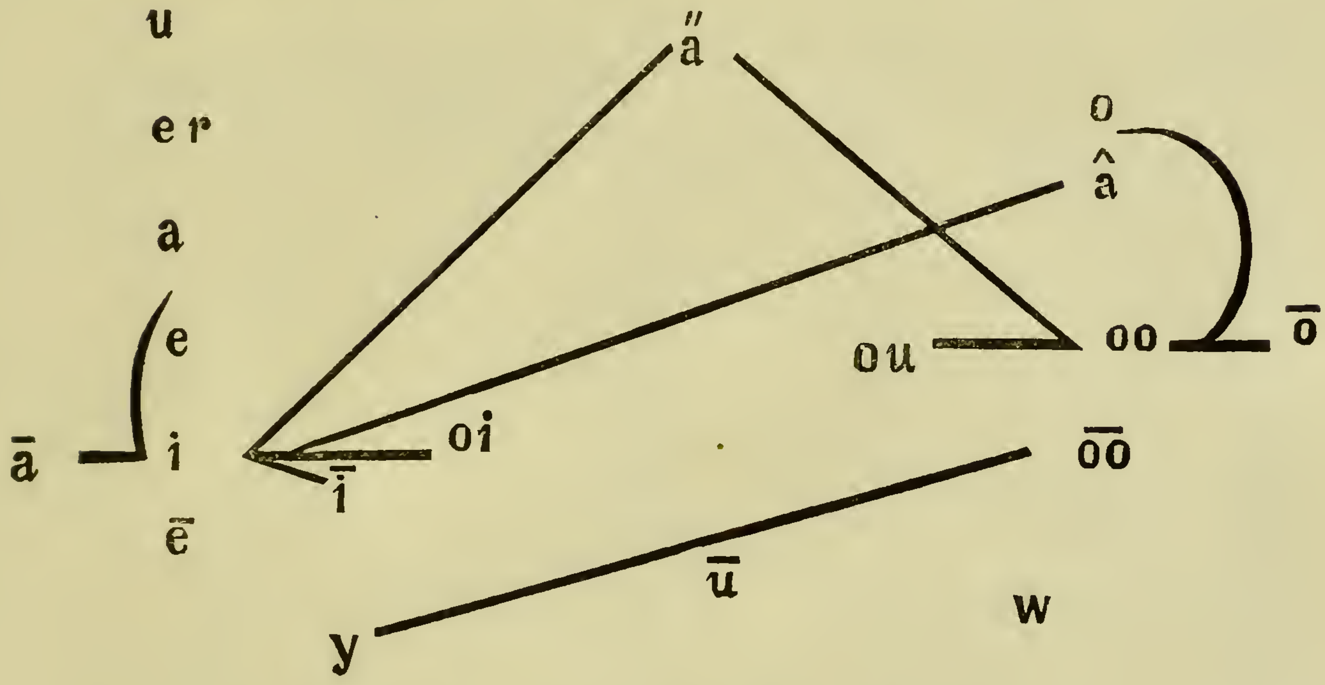
In order to get a view of the various positions of the organs in articulate speech, it is a good plan to study their mechanism at first with the aid of a small hand mirror, as by so doing a fixed impression is made upon the retina, which will be found of great value at a later stage in practical lip-reading. Besides this advantage, it has the effect of giving the student a far larger grasp of the formation of each sound, by the constant repetition of the movements. I may add that this book is not intended to assist the general public, but only those who have had the whole matter thoroughly explained to them.

H.W.W.

13, Sinclair Gardens,
Kensington, W.
November, 1897.

VOWEL SCALE.

Lingual Scale. **Neutral.** **Labial Scale.**



Classification of the Vowels.

Ling. Simple.		Neutral.	Lab. Simple.	
Long	Short	a̋	Long	Short
er	u		â	o
	a		o͞o	oo
	e		(w)	
ē	i			
(y)				

Ling. Compd.	Mix. Ling. & labial	Lab. Compd.
ī	oi	ou
ā	ū	ō

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SYLLABUS.

ARTICULATIONS.

	Surd or Non-Vocal	Sonant or Vocal	Page
(neutral)	h		(9)
Conts.	wh	w	(10)
	f	v	(12)
	th	$\underline{\text{th}}$	(14)
	s	z	(16)
	sh	zh	(18)
Explo.	p	b	(20)
	t	d	(22)
	k	g	(24)
	ch	j	(26)
	x (ks)	$\underline{\text{x}}$ (gz)	(30)
Conts.	y	$\underline{\text{y}}$	(32)
		q (kw)	(28)
Continuous		l	(34)
		r	(35)

Nasal (vocal)

		Page
Continuous	m	(36)
	n	(37)
	ng (ngg)	(38)
	nk=ng+k	(40)

31 Articulations.

Vowel Sounds.

			Page.
	ắ	father	(41)
	â	fall	(41)
	$\overline{\text{oo}}$	food	(43)
	ou	foul	(47)
	ō	foal	(47)
	er	fern	(49)
Short	oo	foot	(43)
	o	fox	(45)
	u	fun	(49)
	a	fan	(54)
	e	fen	(53)
	i	fin	(52)
	ī	fine	(55)
	oi	foil	(56)
	ā	fail	(57)
	ē	feel	(51)
	ū	fuel	(58)

17 Vowel sounds.

Mechanism of the Articulations.

NON-VOCAL.

h.

The Aspirate. This is merely a short, quick expulsion of breath, having no distinct formation of the organs in its production (never being used alone), but assuming that of the following vowel. Thus in articulating the five vowels of the alphabet a, e, i, o, u, if we precede each of them with a short expulsion of breath, we get the words, hay, he, high, hoe and hue. To test further the action of "h" let us place the back of the hand before the mouth and whisper the vowels. We are then conscious of a very slight effect of breath upon the hand, but if we precede it with the aspirate, we feel the expulsion of breath strongly.

VOCAL.

W.

Same action of the organs as "wh," plus vibration of the vocal chords.

NON-VOCAL.

wh.

Labial.

This articulation is not heard in Standard English pronunciation, but is common enough in the Scotch, Irish, Welsh, Colonial and American dialects. It is equivalent to "w" in English, as in the words "what," "which," etc.—sometimes, however, it is equivalent to "h" as in the words "who," "whole," etc.

For its formation the lips must be rounded, contracted and approximated almost together, leaving the smallest possible circular aperture for the emission of breath.

Note.—It is somewhat like the vowel $\overline{\text{oo}}$, the difference being that the aperture through which the breath escapes is so much closer that a vibration of the lips is set up. It is in consequence of this vibration that "w" is classed as an articulation when occurring initially in a word. When, however, it occurs finally, it is a vowel.

This note applies to the vocal form of "wh" only.

VOCAL.

V.

Same action of the organs as "f," plus vibration of the vocal chords.

As in the word "verve."

NON-VOCAL.

f.

Labio-Dental.

This is formed by a slight contact of the middle part of the lower lip with the edges of the upper incisor teeth—the breath is then emitted centrally in a downward direction.

As in the word "fife."

VOCAL.

th.

Same action of the organs as "th," plus vibration of the vocal chords.

As in the word "though."

NON-VOCAL.

th.

Linguo-Dental.

In the production of this element, the extreme front of the tongue is placed between the upper and lower rows of teeth. The contact being light the breath escapes through the position, and, is emitted in a downward direction, as in the case of "f."

As in the word "thing."

These double lettered sounds are called digraphs, and answer to the diphthongs among the vowels.

VOCAL.

Z.

Same action of the organs as "s," plus vibration of the vocal chords.

NON-VOCAL.

S.

Linguo-Dental (Sibilant.)

This is a somewhat difficult articulation, depending as it does on the very precise position of the tongue whilst directing the breath on to the edges of the front upper teeth (incisors). The lips must be slightly apart, the teeth nearly closed, and the tip of the tongue almost in contact with the inside border of the front upper teeth ; the front and top are raised towards the palatal arch, whilst the sides may be felt in contact with their respective back and side upper teeth, thus forming a small channel along the median line, through which the breath is directed.

Note—(For deaf pupil). In consequence of the extremely contracted aperture through which the breath issues, the pupil's finger must be placed quite close to the teeth, in order to feel the emission.

VOCAL.

zh.

Same action of the organs as "sh," plus vibration of the vocal chords.

This sound is never heard initially in correct English pronunciation. You hear its power in such words as "leisure," "pleasure," "azure," etc., but the two letters are never found together in any English word.

NON-VOCAL.

sh.

Linguo-Dental (Sibilant.)

From the position for "s," the tongue is receded bodily, until the point is entirely free from any contact with the teeth or gums. The tongue is, in consequence of this withdrawal, raised in the mouth, and we find it in lateral contact with the upper gums, and not the upper back teeth as in the case of "s." The breath is then emitted centrally through the teeth which are slightly apart. The lips are well apart, and protruded, which protrusion assists somewhat in obtaining that postero-lateral pressure of the tongue required in the production of this sound.

VOCAL.

b.

Has the same formation and action of the organs as "p," plus vibration of the vocal chords. The pressure of the lips is somewhat less decided than for "p" *(see page 62).* A momentary vibration takes place immediately before and at the opening of the lips for the expulsion of the obstructed breath. The vibration must be discontinued as the air escapes, otherwise there will be a vowel sound—this is important.

NON-VOCAL.

p.

Labial.

Consists of first a slight but decided contact of both lips, retaining the breath behind them (the soft palate being raised from its normal position, covers the posterior nares, so that the breath cannot escape through the nose) then a quick opening and abrupt emission of breath.

Note. Care must be taken not to open the mouth more than sufficient to allow the breath to escape, as if this is disregarded a whispered vowel will follow.

VOCAL.

d.

This letter bears the exact relationship to " t " as " b " to " p."

NON-VOCAL.

t.

Anterior Linguo-Palatal.

Lips and teeth slightly apart. The edge of the whole front of the tongue is placed in firm contact with the inside border of the upper gum, thus completely obstructing the breath from passing out of the mouth, and which is in consequence retained behind the tongue (the soft palate at the same time covers the posterior nares, so that the breath cannot escape through the nose.) This position is then abruptly opened by a quick removal of the tongue—accompanied by a slight depression of the lower jow—and the breath is expelled slightly downwards.

VOCAL.

g.

Same relationship to k, as "b" to "p," etc.

NON-VOCAL.

k.

Posterior Linguo-Palatal.

Lips and teeth open. First the back of the tongue by elevation is brought into contact with the soft palate (the action of the tongue raising the soft palate from its normal position, so that the posterior nares are covered.) The breath is thus retained in the pharynx, and upon the parts being quickly separated, an abrupt emission of breath takes place, as in the case of the other explosives "p," "t" and "ch."

VOCAL.

j.

This element bears the same relationship to " ch," as " b " to " p," and " d " to " t."

NON-VOCAL.

ch.

Compound.

Lips and teeth slightly open. This sound may be described as a compound of " t " and " sh," but with this difference, that the tongue instead of assuming the exact position required in the production of " t," should be somewhat receded in the mouth, and its contact with the palate further back, as this is necessary for the proper formation of the "sh," which is effected simultaneously with the opening of the " t " position. The lips are somewhat protruded, and the breath is emitted in a downward direction.

1st position. 2nd position.
t sh t
|
ch

It will thus be noticed that the 't' and 'sh' are not given consecutively, but that the 'sh' is sandwiched between the two positions of the 't.' This is required to give it an explosive character.

VOCAL.

q.

Compound.

This is merely a compound of k and w. It is always followed by u in English, as in the words "quick," "queen," "queer," etc.

VOCAL.

X.

Vocal form of "x," and is merely a compound of "g" and "z," occurring in such words as "exist," "example," etc.

NON-VOCAL.

X.

Compound.

This is a compound of "k" and "s." It requires considerable practice to enable the tongue to pass rapidly from the back position for "k" to the forward one required in the production of "s."

NOTE.—Care must be taken to prevent the interposition of a vowel sound between "k" and "s." Key words—"exercise," extreme," etc.

VOCAL.

y.

The production of this element requires precisely the same position of the organs as for non-vocal " y," with the addition of vibration of the vocal chords, It is very closely allied to, and should be practised in combination with ē and e, as in the words " ye," " yield," " yes," " yet."

When this letter terminates a word it has the power of a vowel, as in the words " lady," " day," " by," etc.

NON-VOCAL.

y.

Linguo-Palatal.

Lips and teeth slightly open. The tip of the tongue is in very firm contact with the inside border of the lower teeth, the sides being closely pressed against the upper side and back teeth and gums. The back and front parts of the tongue are swelling up towards the palatal arch, with which it is in the very closest proximity. The convex position thus assumed by the tongue leaves only the smallest possible passage between it and the palate for the central emission of breath.

The power of non-vocal "y" is heard in the words "Hugh," "hue," etc., which is in reality the aspirate before ū. The sound, however, is never represented by the letter 'y.'

VOCAL.

I.

Linguo-Palatal (lateral vibration.)

Lips and teeth open. In forming this sound the front edge of the tongue is placed in close contact with the inside edge of the front upper gum, the sides being quite free. This action of the organs divides the stream of air, which is allowed to pass over the lax sides of the tongue, causing them to vibrate. The vibration may be distinctly communicated to the pupil by placing his finger on the angle of the lips, or side of the tongue. We have in addition to the vibration of the tongue, that of the vocal chords.

VOCAL.

r.

Linguo-Palatal (frontal vibration.)

Lips and teeth open. The character of this letter in its formation is not unlike that of "l," the difference being that the breath is emitted centrally and not laterally, also that it is the front and tip of the tongue which vibrate and not the sides. The extreme front of the tongue is receded from the teeth, and curved upwards, presenting a partial obstruction to the current of breath, which in passing over causes a vibration in addition to the vibration of the vocal chords.

Note.—Care must be taken that the sides of the back of the tongue are in contact with their respective sides of the upper gums, so that no lateral escape of breath may be possible. The vibratory sound of "r" is only heard initially — finally it has power of the vowel "u," as in the word 'fair.'

VOCAL.

m. (Nasal.)

Labial.

In the production of this element the lips are closed as in the case of "p." The soft palate however is depressed, thus allowing the breath to escape through the nasal passages. A vibration of the vocal chords is necessary, whilst a vibration may be distinctly felt by applying the finger externally to either or both nostrils.

Note.—The vibration of the vocal chords must be checked before the lips are released from their position, otherwise a vowel sound will follow. This is of course where the "m" occurs finally.

VOCAL.

n. (Nasal.)

Anterior Linguo-Palatal.

Lips and teeth slightly open—the tongue is in exact position as for "t," obstructing the breath from passing through the mouth. The soft palate being depressed as in the preceding element, the breath is allowed to pass through the nares. Vibration of the vocal chords is necessary, and a secondary vibration may be perceived in the nose.

Note.—Same as "m." The tongue is here referred to, and not the lips as in "m."

VOCAL.

ng. (Nasal.)

Posterior Linguo-Palatal.

Lips and teeth open. This is not a compound of "n" and "g" as might be supposed, but is a distinct and simple sound. It is produced by the back of the tongue and the depressed soft palate obstructing the breath from passing through the mouth passage, which consequently finds its way through the nasal cavities. The essential difference between this element and "k" lies in the fact that whereas in the former the soft palate descends to form a contact with the back of the tongue, in the latter the back of the tongue rises and forms a junction with the elevated soft palate, thus closing the entrance to the nasal cavities. We have first, vibration of the vocal chords; secondly, nasal vibration.

Note.—Be careful that the tongue is not raised after the production of this power, otherwise a distinct "g" will follow.

VOCAL.

ngg.

Compound.

Sometimes "ng" has the power of "ng+g" as in the words "finger," "linger," "longer." The normal sound of "ng," however, is heard in the words "singer," "ringer," and in the progressive forms of verbs. In certain words containing "ng," "nk," or "nc," we find a variation in the sounds as in the words "angel," "engage," "unkind," "incline," "unconscious." Upon examination, however, it will be found that these are merely prefixes.

The words "Uncle," "anchor," "ankle," etc., follow the general rule.

VOCAL.

nk.

Compound.

This is "ng+k." Thus the following words, "rink," "sink," "pink," "rank," would be more correctly written "ringk," "singk." "pingk," "rangk.

MECHANISM OF THE VOWEL SOUNDS.

a̋=ah (Long.)

Neutral.

This is described as the Neutral vowel, because it does not require any active assistance from either the lips or tongue in its production. The lips and teeth are wide apart, and the tongue lying evenly depressed in the mouth, in order not to affect the stream of vocalised breath—As in the word “ father.”

â

Simple Labial (Long).

From the position for “ a̋,” if the lips be contracted and protruded, assuming a kind of square round shape, the vocalised breath will produce the sound of “ â ”—As in the word “ fall.”

o̅o̅

Simple Labial (Long).

This is the closest of the Labial vowels. The position of the tongue is much the same as for the two preceding vowels—the lips, however, are rounded, contracted, and very closely approximated—thus leaving a small circular aperture for the central emission of breath.

oo.

Simple Labial (Short).

This is the short equivalent of “ o̅o̅,” the position however being slightly more open. Quick, short expiration of breath, whilst the vibration of the vocal chords is abruptly checked. This is characteristic of all the short vowels.

It is closely allied to, and should be practised in combination with “ w ”—As in the words “ wool,” “ woman.”

O

Simple Labial (Short).

This is regarded as the short equivalent of â. The position however is more open, and the lips not being protruded assume a rounder shape. The vibration of the vocal chords is short, quick, and abruptly checked—as in the word "fox."

ou=a̋+oo.

Compound Labial.

From the position for a̋, the lips are quickly brought into that required for oo. The vibration of the vocal chords which is even throughout, is abruptly ceased the moment the oo position is attained—as in the word "foul."

ō

Compound Labial.

This vowel sound commences at an intermediate position between "â" and "o," when the lips are quickly rounded and contracted, and brought into the position for "oo," as in the previous vowel sound "ou." The vibration of the vocal chords which is even throughout, should be abruptly checked the instant the "oo" position is arrived at—as in the word "foal."

er

Lingual Simple. (Long.)

From the position for "a̋," the back of the tongue is slightly raised, and the jaws approximated, thus decreasing the size of the oral channel. Even vibration of the vocal chords—as in the word "fern."

u

Lingual Simple. (Short.)

This vowel is very closely allied to the preceding one, being generally considered as its short equivalent, the position, however, is somewhat more open. The vibration of the vocal chords must be short, quick and abruptly checked—as in the word "fun."

ē

Lingual Simple. (Long.)

Lips and teeth apart—the lips being slightly more open than the teeth, and parallel.

The tip of the tongue is firmly pressed against the lower incisor teeth, the two sides being in firm contact with the upper back teeth. The tongue then assumes a convex form, as the front and top are raised towards the palatal arch— a very small channel along the median line of the tongue being left for the central emission of breath—as in the word "feel." Even vibration of the vocal chords.

"Y" is a closer position than "ē," and there not being free egress for the breath between the tongue and the palate, a vibration of the former takes place, which causes this letter initially to be classed as an articulation—as in the words "yet," "yes," etc.

i

Lingual Simple. (Short.)

This vowel is regarded as the short of "ē." The position of the tongue is slightly more depressed than for "ē," the teeth being consequently more open.

Quick, short expiration of breath, with abrupt checking of the vibration of the vocal chords—as in the word "fit."

Note. In all cases the position of the short equivalent is slightly more open than the long vowel.

e

Lingual Simple. (Short.)

From the "i" position, the tongue is again depressed, thus further enlarging the mouth or buccal channel. Quick, short, expiration of breath, with abrupt checking of the vibration of the vocal chords—as in the word "net."

a

Lingual Simple. (Short).

From the "e" position, the tongue is again depressed with further enlargement of the oral channel. Quick, short expiration of breath, with abrupt checking of the action of the vocal chords—as in the word "mat."

ī

Lingual Compound.

This is compounded of "a̋" + "i." From the position for "a̋," the jaws are quickly approximated, and the tongue raised to that required for "i." The vibration, which must be even throughout, is discontinued the moment the latter position is attained—as in the word "light."

oi

Labio-Lingual.

This is a compound of "â" and "i." Commencing with the labial position for "â." the somewhat rounded lips are quickly brought into a parallel position, the tongue rising at the some moment to the position for "i." The vibration of the vocal chords must be even throughout, and abruptly checked upon the latter position being reached, as in the word "coil."

$\bar{a}$

Lingual Compound.

The initial position of this vowel is indefinable. It is somewhere between the position of "a" and "e," the tongue then quickly assuming that required for "i." As in the case of all the compound words, the vibration of the vocal chords must be even throughout, and abruptly checked upon the final position being attained.

This vowel sound is heard in the word "fame."

ū

Linguo-Labial.

This vowel commences at the closer position of "ē," viz.: "y," the lips then change their parallel position, becoming contracted and rounded until the "oo" position is reached. It will thus be recognised that ū is not a pure vowel, the first part being an articulation. For this reason it is more correct to place the article 'a' before words commencing with ū, and not 'an' as is generally done. The vibration of the vocal chords is even throughout, and abruptly checked upon the "oo" position being attained, as in the word "fume."

APPENDIX.

Having briefly described the mechanism of the various sounds, it may be useful to point out the physiological difference between an articulation (commonly called 'consonant') and a vowel sound.

In the latter, the breath is allowed to pass through an open tube, more or less restricted, and there is consequently an absence of vibration of the articulating organs. In the former, however, the organic formation is such as to wholly or partially obstruct the breath from passing out. A vibration is therefore set up, and the purity of the sound destroyed, thus causing it to be classed as an articulation.

'R,' 'W' and 'Y' are articulations only where they occur initially, as in the words 'round,' 'window,' 'yes.' Where, however, they appear finally, they have a vowel power, as in the words, 'fear,' 'brow,' 'by.'

It is worthy of notice that the word ending in 'r' is subject to variation when it precedes a word commencing with a vowel, as in the sentence, "I have no fear of it."

If this sentence be repeated in a fluent manner, it will be noticed that the final 'r' in 'fear' has its ordinary consonantal power after its vowel power. This is in order to divide what would otherwise be two succeeding vowels, an awkward matter for the organs of articulation.

Double Explosives.—Another very interesting point to be observed is the fact that where a word ending in an explosive sound is followed by one commencing with another explosive, the first gives way to the second, and is deprived of half its power, *e.g.*, "The pack‿can be hunted." It is very clear that after taking up the position for the 'k' in 'pack,' the sound is then abandoned, and that same formation utilised for the 'k' in 'can,' and thus only one is visible. This is done entirely to accommodate the organs of speech, and to save physical effort.

Double continuous sounds.—In the case of double continuous sounds, however, *the breath is not allowed to cease*, but the double quantity given through the one position. Thus in the sentence, "My wife‿found the book," the 'f' in 'wife' is continued sufficiently long, and with enough force to provide for the 'f' in 'found.' A careful observation of these important points will be found of great assistance alike to students of speech and lip-reading.

Initial sounds with the same visible movement.—It would be well for students to group those sounds in their minds which have an identical initial movement, as they would then be ready to supply whichever is demanded by the context. Thus ‘ m ’ ‘ p ’ and ‘ b,’ and ‘ n ’ ‘ t ’ and ‘ d ’ must always be associated.

It therefore follows that whenever ‘ t ’ or ‘ d ’ precedes ‘ n ’ as in the words ‘ bidden,’ ‘ maiden,’ ‘ button,’ &c., a slight difficulty will present itself to the lip-reader, as only one movement is visible. The ‘ t ’ or ‘ d ’ position being the same as ‘ n,’ it is not released in the usual manner, but the breath which is collected behind the tongue is forced through the nose upon the depression of the soft palate, and thus we have an explosive ‘ n.’

In the case of ‘ t ’ or ‘ d,’ followed by ‘ l ’ finally, as as in the words ‘ little,’ ‘ ladle,’ &c., careful attention must be directed to the fact that only the sides of the tongue are dropped, which thus converts the ‘ t ’ into ‘ l.’ The frontal contact of the tongue is retained, and this obviously interferes with a sight of the previous sound. A large number of words therefore with ‘ tn ’ and ‘ tl ’ finally should be studied, in order to get accustomed to these difficult movements.

The Aspirate.—It must always be borne in mind that the aspirate is invisible. It is merely a rush of unvocalised breath through the tube of the vowel which follows. Thus in the word ‘ hall,’ the breath is issued through the â position, and so on, therefore those who are lip-reading must always be prepared to supply the aspirate when necessary. The context will be the guide in such a case.

With regard, however, to those who stammer, a great difficulty is often experienced in getting the voice, after the breath has been allowed to pass through the well open glottis, and thus the lungs are very quickly exhausted. The danger is probably more pronounced in the case of the open vowels, than in the close ones. Consequently the word 'half' would present more chance of failure than the word 'heap.' In such a case it is better not to commence with a very full lung, and to keep the fact that voice is required almost simultaneously with the issuing breath, foremost in the mind.

Vocal and Non-Vocal Equivalents (explo.)—It is well to remember that the vocal articulation requires less pressure of the organs than its non-vocal equivalent, for the simple reason that in the former the action of the vocal chords prevents so large a quantity of breath from passing through the glottis, hence the resistance is not so great. The pressure of the lips therefore would be somewhat less decided in the initial movement of the word 'beauty' than in the word 'pupil' : this applies to all the explosives.

This note will be found useful by those who hesitate in their speech, as the tendency is frequently to surcharge the lungs, with the natural and inevitable consequence of an excess of muscular action leading to serious complications.

Long vowels and their short equivalents.—Although we are accustomed to regard long vowels and their short equivalents as having the same mechanism, there is a slight difference, the short vowel being somewhat more open. This is not difficult to understand when it is considered how quickly the position has to be abandoned in the case of the short vowel in order to ensure its proper power. This should be seized upon by persons learning to lip-read, being of great importance in distinguishing between them.

Compound and Simple vowels.—Perhaps it will not be out of place to briefly explain that by compound vowel is meant one where there is a change in the organic position during its progress. A simple vowel on the other hand commences and terminates with the same formation.

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m.	Pressing lips lightly together with vibration in the nose
n.	Whole tip of tongue resting and pressing flatly against back of top teeth.
r.	Vibratory morement of tongue against hard palate.
s.	Pressing sides of tongue against sides of top teeth but keeping tip of tongue even with lower teeth to allow of a hissing sound to come ou
sh.	Pressing sides of tongue against sides of teeth with lips protruded in position for "or" and sending the breath forcibly.
ch.	Sharp sound formed by "t" and "sh".

Formation of Consonant Sounds.

h.	Simple emission of breath.
f.	Formed by upper teeth resting on lower lip with simple emission of breath.
th.	Formed by pressing tip of tongue against upper teeth with slightly forced breath
p.	Explosive sound formed by pressing lips together & parting quickly & lightly
t.	Formed by pressing tip of tongue against back of front teeth and then parting quickly by sharp emission of breath.
k.	Formed by pressing back of tongue against soft palate and quickly parting again with sharp emission of breath.
v. th. b. d. g.	Corresponding heavy sounds produced by vibratory sound in glottis.

Avonhurst,
Burgess Hill,
Sussex.

Feb 19
1921

Dear Dr Shuttleworth

I am sending the Chart written out by this aunt. If you will let me have it back with any corrections, I will have it typed and send it to Leach then he can set on with No 2.

I hope you are feeling
better. I am taking
Dr Cockburn's medicine
& Col. Elliott wrote the glasses
are to come soon.—
I wonder when you will
come to sign up Davie's
hite. Davie Fry has
ot returned yet as he has
lcer of the cornea.

Yours ~~sincerely~~ gratefully
Margaret Macdowall

Come to sign up Davies
White. David Fry has
not returned yet as he has
ulcer of the cornea.

Yours ~~Sincerely~~ gratefully
Margaret Macdowall